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Burton

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[45] **Date of Patent: Dec. 5, 2000**

[54] **FLEXIBLY JOINTED TOILET BRUSH**

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[73] Assignee: **General Housewares Corp.**, Terre Haute, Ind.

[21] Appl. No.: **09/226,756**

[22] Filed: **Jan. 6, 1999**

[51] **Int. Cl.**[7] **A46B 9/02**

[52] **U.S. Cl.** **15/160**; 15/104.2; 15/143.1; 15/144.1; 15/145; 15/172; 15/176.2; 15/DIG. 5; 15/DIG. 6; 15/164; 403/220; 403/223; D4/128; D4/138

[58] **Field of Search** ..... 15/104.16, 104.2, 15/106, 143.1, 144.1, 145, 144.2, 159.1, 160, 164, 172, 176.2, DIG. 5, DIG. 6; 403/220, 223; D4/127, 128, 130, 132–134, 138

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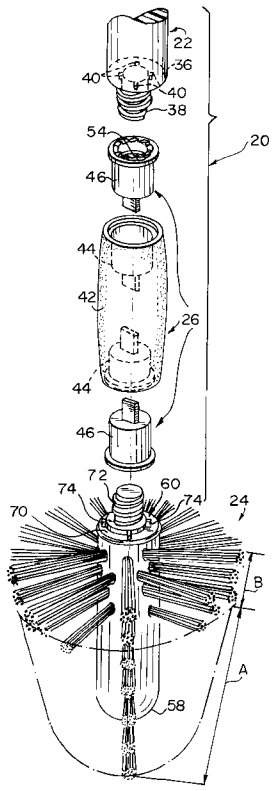
Attorney, Agent, or Firm—Seyfarth Shaw

[57] **ABSTRACT**

A toilet brush is provided which includes an elongated handle having a first axis, a brush head having a second axis, and a flexible joint flexibly connecting the handle to the brush head. The joint is threadedly connected to at least one of the brush head and the handle, whereby the joint allows the second axis of the brush head to be deflected with respect to the first axis of the handle. The brush head may also include first and second sets of segregated bristles. The second set of bristles being longer, stiffer and disposed closer to the handle than the first set of bristles.

18 Claims, 3 Drawing Sheets



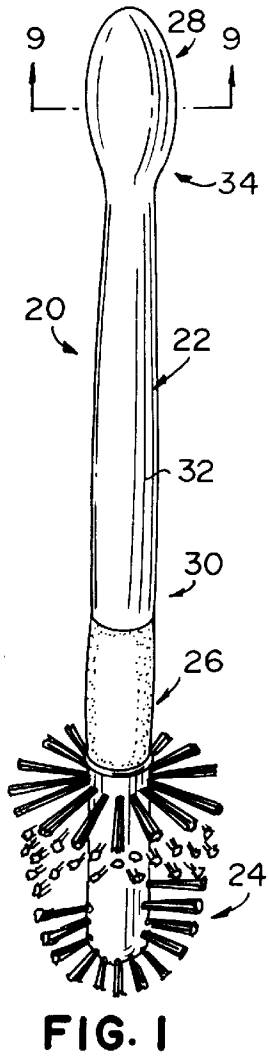


FIG. 1

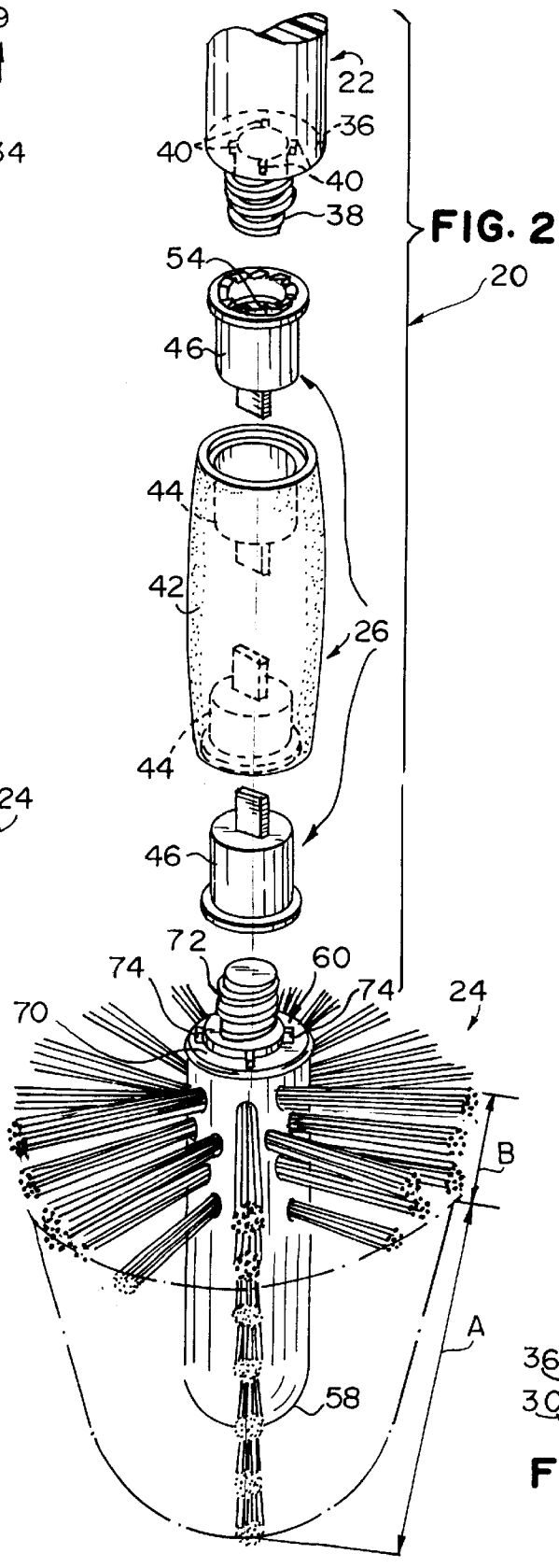


FIG. 2

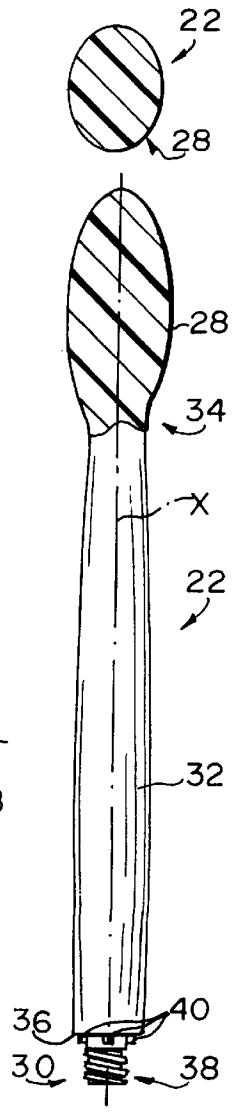


FIG. 8

FIG. 9

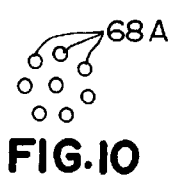


FIG.10

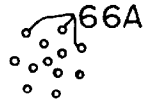


FIG. 11

FIG. 3

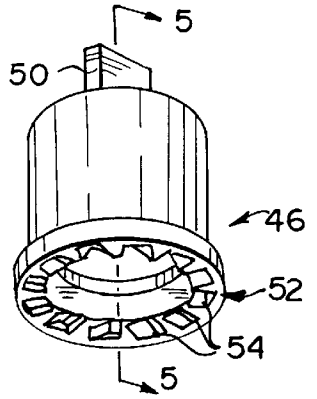


FIG. 4

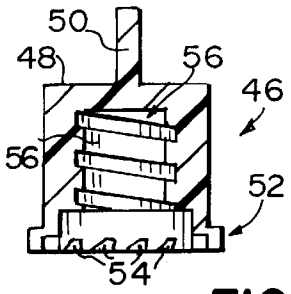


FIG.5

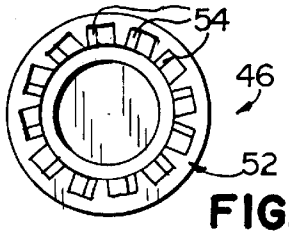


FIG.6

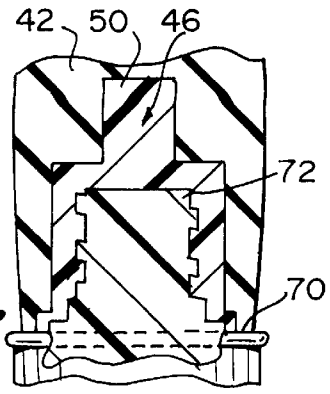


FIG.7

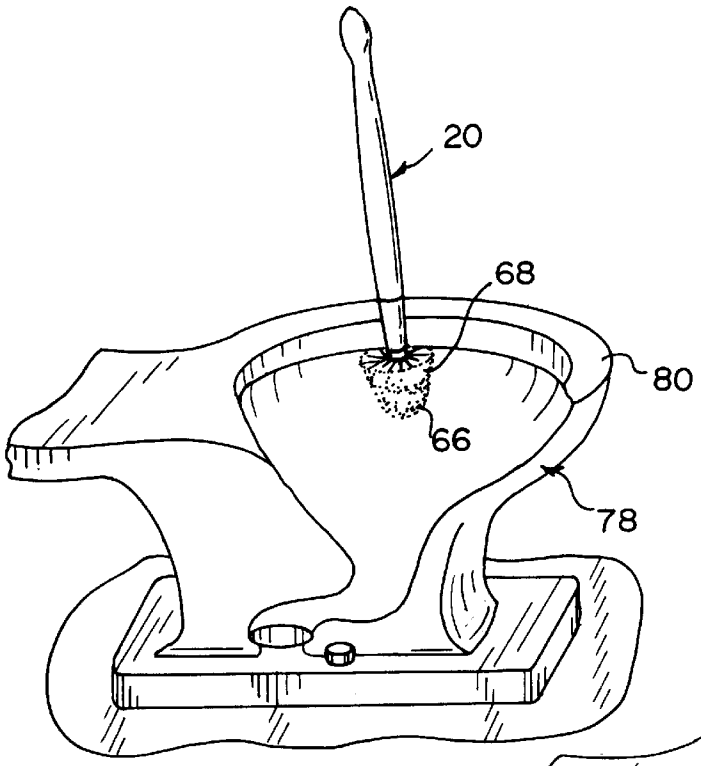


FIG. 12

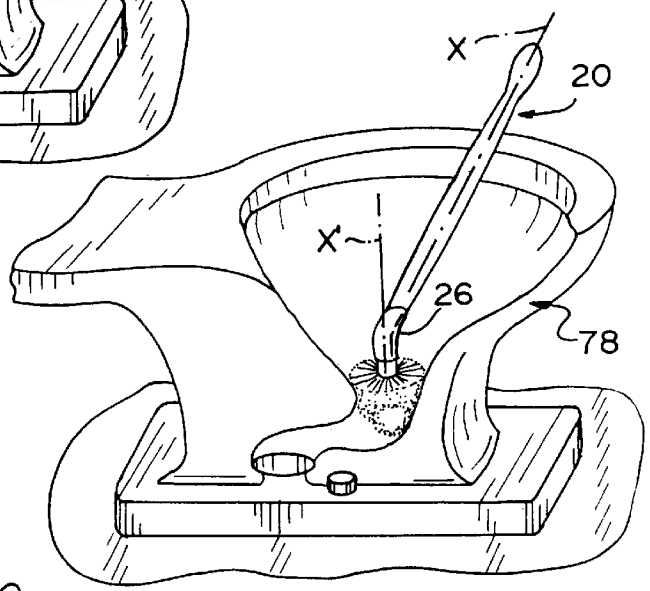
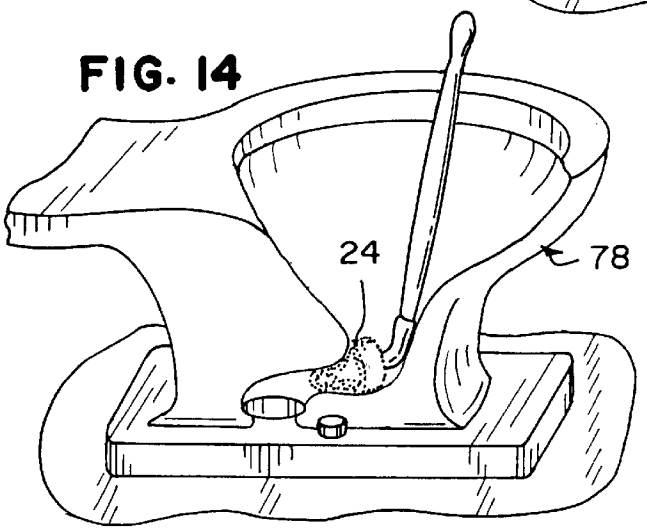


FIG. 13

FIG. 14



FLEXIBLY JOINTED TOILET BRUSH

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to toilet brushes, and more particularly to flexibly jointed toilet brushes.

2. Description of the Prior Art

In the past, toilet brushes have been provided to clean the inner portion of the toilet bowl. These brushes usually consisted of an elongated handle integral with or rigidly connected to a brush head having cleaning bristles. These brushes suffer from several problems. First, the brush heads and bristles are not shaped and dimensioned to easily clean under the rim of the toilet bowl. Second, the rigidity of the handle/brush connection, as well as the size and shape of the bristle configuration, does not allow a user to easily manipulate these brushes to clean portions of the bowl including the now smaller orifices of the new low flush toilets. Manipulation of these brushes may in fact cause the handles of these brushes to break or otherwise be damaged. Finally, the handles of these brushes often would rotate or slip in a user's hand making cleaning more difficult.

SUMMARY OF THE INVENTION

It is a general object of the invention to provide an improved toilet brush which avoids the disadvantages of prior toilet brushes while affording additional structural and operational advantages.

An important feature of the invention is the provision of a toilet brush which is of a relatively simple and economical construction.

Another feature of the invention is the provision of a toilet brush of the type set forth having a brush head shaped, dimensioned and constructed to easily and efficiently clean under the rim of a toilet bowl.

A still further feature of the invention is the provision of a toilet brush of the type set forth whose head can be deflected relative to its handle to allow the brush head to better reach and clean the different portions of the toilet bowl.

Another feature of the invention is the provision of a brush of the type set forth whose handle shape conforms to the hand of the user and aids in preventing the handle from twisting in use.

Certain ones of these and other features of the invention may be attained by providing a toilet brush which includes an elongated handle having a first axis, a brush head having a second axis, and a flexible joint flexibly connecting the handle to the brush head. The joint is threadedly connected to at least one of the brush head and the handle, whereby the joint allows the second axis of the brush head to be deflected with respect to the first axis of the handle.

The invention consists of certain novel features and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the details may be made without departing from the spirit, or sacrificing any of the advantages of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

For the purpose of facilitating an understanding of the invention, there is illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, the invention, its construction and operation, and many of its advantages should be readily understood and appreciated.

FIG. **1** is a perspective view of the toilet brush of the present invention;

FIG. **2** is an enlarged, exploded perspective view of FIG. **2**;

FIG. **3** is a fragmentary side elevational view of the brush at FIG. **1** in partial section;

FIG. **4** is a perspective view of one of the connectors of the joint;

FIG. **5** is a sectional view taken generally along the line **5—5** of FIG. **4**;

FIG. **6** is a bottom plan view of the connector of FIG. **5**;

FIG. **7** is an enlarged, sectional view illustrating the connectors between the joint and the brush head;

FIG. **8** is a side elevation view of the handle of the brush;

FIG. **9** is sectional view of the handle of FIG. **1**, taken along the line **9—9** therein;

FIGS. **10–11** are schematic views of portions of the two sets of bristles in the head; and

FIGS. **12–14** are schematic illustrations of the brush in use.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As seen in FIG. **1**, a toilet brush **20** is provided. The toilet brush **20** includes an elongated handle **22**, a brush head **24** and a flexible joint **26** flexibly connecting the brush head **24** to the handle **22**.

The handle **22** can be formed out of a variety of materials including plastic, such as polypropylene. As seen in FIGS. **1** and **8**, the handle **22** has a longitudinal axis and first and second ends **28**, **30**. The first end **28** is shaped and dimensioned to fit comfortably in the hand of a user. In that regard, the first end **28** is substantially elliptical in both longitudinal (FIG. **8**) and transverse cross section (FIG. **9**). When a user holds the handle by forming a fist around the first end **28**, the elliptical transverse cross section aids in preventing rotation of the handle in use as the internal portion of the user's fist conforms to the shape of the first end **28**.

The elliptical longitudinal cross section of the handle **22** provides a smooth continuous surface without sharp corners which fits comfortably in a user's hand without pinching the user's hand.

The handle **22** also includes a substantially frustoconical-shaped central portion **32** connected to the first and second ends **28**, **30**. The central portion **32** increases in diameter from the first end **28** towards the second end **30**. As seen in FIGS. **1** and **8**, the first end **28** has portions which extend radially outwardly from the axis of the handle **22** a greater distance than the central portion **32** at a junction **34** between the first end **28** and central portion **32**. The first end **28** thus forms a knob which when held in a user's hand, allows the user to maintain the first end **28** in his grasp and resist longitudinal forces in a direction from the first end **28** to the second end **30** which may be encountered in use.

The second end **30** of the handle **22** includes a substantially planar surface **36** (FIG. **2**), a male threaded stud **38** and four locking tabs **40** projecting from the planar surface **36**.

As seen in FIGS. **2** and **3**, the flexible joint **26** is elongated and includes a flexible body **42** formed of a flexible material, such as an elastomer or rubber, including a plastic sold under

the tradename Santoprene. The body **42** has two cavities **44** respectively at its longitudinal ends.

The joint **26** also includes two connectors **46**, which preferably are formed of a plastic such as polypropylene. The interior of the cavities **44** are shaped substantially identical to the exterior of the connectors **46**. The connectors **46** are fixedly disposed in the cavities **44**. A preferred method of assembling the flexible joint **26** includes disposing the previously formed connectors **46** in a mold and injection molding the material forming the flexible body **42** about the connectors **46** creating a bond between the two.

The connectors **46** are cup-shaped having a planar bottom surface **48** and a rectangular tab **50** projecting therefrom. When the connectors **46** are disposed in a cavity **44**, each of the tabs **50** projects from the bottom surface **48** toward the center of the flexible body **42** (FIG. **3**). Each of the connectors **46** has an end which includes a rim **52** (FIGS. **4–6**) having a plurality of locking receptacles **54** disposed therein and discussed further below. Each connector **46** includes a female threaded cavity **56** (FIG. **5**).

As seen in FIG. **2**, the brush head **24** includes a base **57** preferably formed of a plastic such as polypropylene. The base **57** has a first end **58** includes a substantially bullet shaped base portion **62** and a plurality of cavities **64** (FIG. **3**) circumferentially and axially disposed about its outer peripheral surface. A first set of bristles **66** formed by a plurality of bristles **66A** is disposed in each of the cavities **64** of a zone A. A second set of bristles **68** formed by a plurality of bristles **68A** is disposed in the remaining cavities **64** in a zone B, which, as shown in FIG. **3**, includes the three bottommost rows of cavities **64** closest to second end **60**. The first and second sets of bristles **66**, **68** form a bullet shaped configuration.

The second set of bristles **68** extend radially outwardly from the base **57** a greater distance than the first set of bristles **68**. The bristles **68A** of the second set of bristles **68** are stiffer than the bristles **66A** of the first set of bristles **66**. As seen in FIGS. **10** and **11**, the bristles **68A** have a larger diameter than the bristles **66A**.

The second end **60** of the base **57** includes a planar surface **70** from which a male threaded stud **72** and four equally-spaced locking tabs **74** (only three shown in FIG. **2**) extend.

The brush **20** is assembled as follows. The threaded stud **38** of the handle **22** is inserted and secured into the locking receptacles **54** of one of the connectors **46**. When the threaded stud **38** is threaded fully, the four locking tabs **40** are respectively disposed in four associated locking receptacles **54** of the connectors **46** which aid in preventing the brush head **24** from rotating relative to the handle **22**, or vice versa.

Similarly, the threaded stud **72** of the base **57** of the brush head **24** is inserted and secured into the locking receptacles **54** of the other connector **46**. When the threaded stud **72** is fully threaded, the locking tabs **74** are respectively disposed in four associated locking receptacles **54** of the connector **46** which aids in preventing the brush head **24** from rotating relative to the brush head **24** or vice versa.

FIGS. **12–14** illustrate the brush **20** in use with a toilet bowl **78**. As seen in FIG. **12**, the second set of bristles **68** have a length long enough and are stiff enough to clean under a rim **80** of the toilet bowl **78**.

As seen in FIGS. **13** and **14**, the flexible joint **26** allows the axis of the base **57** of the brush head **24** to be deflected relative to the axis of the handle **22** to allow the brush head **24** to easily reach and clean the different areas of the bowl **78**.

Additionally, as seen in FIG. **14**, the bullet-shaped configuration of the first and second set of bristles **66**, **68** allow the brush head **24** to reach into and clean the small diameter portions of the bowl **78**, such as the flush hole.

While particular embodiments of the present invention have been shown and described, it will be appreciated by those skilled in the art that changes and modifications may be made without departing from the invention in its broader aspects. Therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of the invention. The matter set forth in the foregoing description and accompanying drawings is offered by way of illustration only and not as a limitation. The actual scope of the invention is intended to be defined in the following claims when viewed in their proper perspective based on the prior art.

What is claimed is:

1. A toilet brush comprising:

an elongated handle having a first axis;

a brush head having a second axis and a plurality of bristles projecting from the head in a bullet-shape configuration and shaped and dimensioned for cleaning a toilet bowl; and

a flexible joint flexibly connecting the handle to the brush head, the joint threadedly connected to at least one of the brush head and the handle, the joint having an at-rest condition wherein the first and second axes are substantially coaxial and a deflected condition wherein the second axis of the brush head is deflected with respect to the first axis of the handle,

the head having a first end connected to the joint and a second terminal end, wherein the bristles adjacent the first end are longer and stiffer than the bristles disposed closer to the second terminal end.

2. The brush of claim **1**, wherein the joint includes an elongated elastomeric body having first and second ends, the first end including a first threaded connector, the first threaded connector being threadedly connectable to one of the brush head and the handle.

3. The brush of claim **2**, wherein the second end of the joint includes a second threaded connector, wherein the first and second connectors are respectively threadedly connected to the head and handle.

4. The brush of claim **3**, wherein the first and second ends of the body respectively form first and second cavities and the first and second connectors are respectively fixedly disposed in the first and second cavities.

5. The brush of claim **4**, wherein the first and second connectors are bonded to the body.

6. The brush of claim **4**, wherein each of the first and second connectors is cup-shaped and has a bottom wall and a tab projecting from the bottom wall toward the center of the body.

7. The brush of claim **3**, wherein the first and second connectors respectively include first and second locking receptacles and the head has a head locking projection disposed in the first locking receptacle and the handle has a handle locking projection disposed in the second locking receptacle, whereby the joint is substantially prevented from rotating with respect to either the handle or the head.

8. The brush of claim **1**, wherein the handle has a first end connected to the joint and a second terminal end substantially elliptical in transverse cross-section.

9. The brush of claim **8**, wherein the second terminal end of the handle is substantially elliptical in longitudinal cross-section.

10. A toilet brush comprising:

an elongated handle;

a brush bead having an axis, a first free end and a second end coupled to the handle;

a first set of bristles disposed about the axis and coupled to and radially projecting outwardly from the head, all of the bristles of the first set being disposed along an axial extent of the head containing no other bristles; and

a second set of bristles segregated from the first set of bristles and disposed about the axis and coupled to and radially projecting outwardly from the head, the second set of bristles being disposed closer to the second end than first set of bristles, each of the bristles of the second set being stiffer than each of the bristles of the first set, the first and second sets of bristles shaped and dimensioned for cleaning a toilet bowl.

11. The brush of claim **10** wherein each bristle of the first set has a first diameter and each bristle of the second set of bristles has a second diameter, the second diameter being greater than the first diameter.

12. The brush of claim **10**, wherein the bristles of the second set radially project a greater distance from the axis than the bristles of the first set.

13. The brush of claim **10**, wherein the first and second sets of bristles collectively form a bullet-shaped configuration.

14. The brush of claim **10**, and further comprising a flexible joint flexibly connecting the handle to the brush head, whereby the joint allows the brush head to be deflected with respect to the handle.

15. The brush of claim **14**, wherein the joint includes an elongated elastomeric body having first and second ends including a first and second threaded connectors, the first and second threaded connectors respectively threadedly connected to the brush head and the handle.

16. The brush of claim **15**, wherein the first and second ends of the body respectively form first and second cavities and the first and second connectors are respectively fixedly disposed in the first and second cavities.

17. The brush of claim **14**, wherein the handle has a first end connected to the joint and a second terminal end which is substantially elliptical in transverse cross-section.

18. The brush of claim **17**, wherein the second terminal end of the handle is substantially elliptical in longitudinal transverse cross-section.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,154,913
DATED : December 5, 2000
INVENTOR(S) : Burton, Maximillian P.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 5,
Line 3, "bead" should be -- head --.

Signed and Sealed this

Twenty-fifth Day of September, 2001

Attest:

Nicholas P. Godici

Attesting Officer

NICHOLAS P. GODICI
Acting Director of the United States Patent and Trademark Office

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

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DATED : December 5, 2000
INVENTOR(S) : Burton, Maximillian P.

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Column 5,
Line 3, "bead" should be -- head --.

Signed and Sealed this

Twenty-seventh Day of November, 2001

Attest:

Nicholas P. Godici

Attesting Officer

NICHOLAS P. GODICI
Acting Director of the United States Patent and Trademark Office